

LISTING OF CLAIMS

1-23. (Cancelled)

24. A method of decoding an array composition comprising

a) providing an array composition comprising:

i) a substrate with a surface comprising discrete sites; and

ii) a population of microspheres comprising at least a first and a second subpopulation distributed on said discrete sites, wherein each subpopulation comprises an identifier nucleic acid sequence comprising:

1) a primer sequence; and

2) a decoding sequence adjacent to said primer sequence;

wherein said microspheres are distributed on said surface; and

b) adding to said array composition a first probe of a set of combinatorial decoding probes each probe comprising:

i) a priming sequence complementary to said primer sequence;

ii) a least one decoding nucleotide that will basepair with at least one nucleotide of at least one of said decoding sequences, said decoding nucleotide comprising a label; and

c) detecting the presence of said label.

25. The method according to claim 25, further comprising:

d) adding to said array composition a second probe of a set of combinatorial decoding probes comprising:

- i) a priming sequence complementary to said primer sequence;
- ii) at least one decoding nucleotide that will basepair with at least one nucleotide of at least one of said decoding sequences, said decoding nucleotide comprising a label; and
- e) detecting the presence of said label.

26. (Cancelled.)